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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,041	07/08/2003	Hiroyuki Otaki	CU-5982	3932

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EXAMINER	
ANGEBRANNDT, MARTIN J	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/615,041	OTAKI ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-8,10-13,15-19,21-24 and 30-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-8,11-13,15-19,21-24 and 30-48* is/are rejected.

7)☒ Claim(s) *10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicants are presented after the first rejection to which they are directed.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 43-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

"ehtylenically" should read - - ethylenically- - in claim 43.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 32-34, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. JP 05-273899, in view of Toba et al. JP 06-175554 .

Sugawara et al. JP 05-273899 see example 2, where the monomer having the formula 20 is used to improve the qualities of a volume hologram which was formed from a composition comprising PVCz, tribromophenol methacrylate, a benzophenone and a coumarin sensitizer. [0048]. Useful binders are disclosed including polyvinyl acetate and acrylic resins and copolymers of acrylic acid. [0008-0009]. Useful photointiators include benzoin alkyl ethers, benzophenone, iodonium salts and the like [0024,0041]. The use of sensitizers, including merocyanine (meroshinin) dyes to increase the sensitivity of the composition is disclosed. [0025].

Toba et al. JP 06-175554 teaches the use of merocyanine sensitzers in holographic recording compositions including the dye of formula k [0057]. These are used to sensitize iodonium salt initiated free radical polymerization (abstract and throughout). The use of fluorinated acrylates which have high refractive indices is disclosed. [0024]. The inclusion of polymers is disclosed.

It would have been obvious to modify the composition of example 2 of Sugawara et al. JP 05-273899 by using other photoinitiators and sensitizers disclosed, such as iodonium salts and merocyanine dyes taught by Toba et al. JP 06-175554 based upon the direction in Sugawara et al. JP 05-273899 at [0024-0025]. Further it would have been obvious to use other binders of copolymers or copolymer blends such as polyvinyl acetate-acrylic acid based upon the direction at [0008-0009] in Sugawara et al. JP 05-273899. The applicant points out that the composition in the examples includes a holographic image prior to holographic recording. The argument fails to appreciate that the addition of a further monomer, initiator, and sensitizer as discussed at [0024-0025,0041] allows further recording of holographic images (multiplexing). The reacted

monomer and any initially included binders are effectively binders at this juncture. The Toda reference(s) teach the recited sensitizing dye. Polyvinyl carbazole or acrylic resin binders will have available (unterminated) reactive ethylenically unsaturated groups

The applicant failed to argue this rejection, therefore no response is proper.

7. Claims 18,19,21-24 and 43-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. JP 05-273899, in view of Morii et al. 378.

Morii et al. '378 teaches volume holographic material with particles in them to improve breaking during foil/heat transfer these include various fine particles. (6/6-14, 40/65-41-64). The refractive index of the particles is described as almost identical to the photosensitive material/composition, which clearly indicates as difference. The use of fluorinated carboxylic acids [fluorinated (meth)acrylates] (12/54,13/57-14/5). Useful binders disclosed include vinlyacetate, vinylalcohol, PVC, and others (15/37-56). The use of various sensitizing dyes including cyanine, merocyanine, coumarin, ketocoumarin dyes is disclosed (15/29-35).

It would have been obvious to modify the composition of example 2 of Sugawara et al. JP 05-273899 by adding fine particles of silica or the like as taught by Morii et al. '378 to allow its use in holographic transfer foils. Further it would have been obvious to use other binders of copolymers or copolymer blends such as polyvinyl acetate-acrylic acid based upon the direction at [0008-0009] in Sugawara et al. JP 05-273899 of the binders taught by Morii et al. '378.

The applicant failed to argue this rejection, therefore no response is proper.

8. Claims 32-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara et al. JP 05-273899, in view of Toba et al. JP 06-175554, further in view of Ito et al. JP-08-016077.

Ito et al. JP 08-016077 teaches a mixture of cationically curable and free radically curable monomer, onium salts and a sensitizing dye useful for holographic recording which evidences improved chemical, heat and weatherability resistance. The cationically curable material can include a fluorene moiety as illustrated in formulae 1-3 [0028-0030]. The sensitizing dye can be various dyes including merocyanine dyes [0020,0035-0041]. The useful onium salts are disclosed including iodonium and sulfonium salts [0034]

In addition to the basis above, it would have been obvious to one skilled in the art to modify the media rendered obvious by the combination of Sugawara et al. JP 05-273899 and Toba et al. JP 06-175554 by adding a cationically curable monomer/oligomer containing fluorene and initiator for this as taught by Ito et al. JP 08-016077 to improve the heat, weather and chemical resistance of the resulting hologram.

The applicant failed to argue this rejection, therefore no response is proper.

9. Claims 1,5,7,8,11-12,15-17 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwagi et al. JP 03-123715, in view of Toda et al. JP 06-130879.

Kashiwagi et al. JP 03-123715 teaches the composition of example2, in table 1, where a epoxy monomers DPEP, PRGE and HDEP (structures shown on page 7) are included with triphenylsulfonium hexafluorophosphate (identified on page, lower left column). The addition of resinous binders is disclosed. These include epoxy resins, acrylate resins, epoxy(meth)acrylate resins, urethane acrylates, polybutadiene acrylate and modified products (page 2, lower left column, first full paragraph) . The use of various UV light sources including mercury, carbon, xenon or fluorescent lamps is disclosed. (page 6/lower right column, first full paragraph)

Toda et al. JP 06-130879 teaches the use of merocyanines to sensitize sulfonium salts in holographic recording compositions including the dyes of formula K [0041]. These are used to sensitize sulfonium salt initiated free radical polymerization (abstract and throughout). The use of fluorinated acrylates which have high refractive indices is disclosed. [0024]. The inclusion of polymers in amounts of 30-70% is disclosed [0058]. The use of these in recording with lasers or UV light sources is disclosed [0062].

It would have been obvious to add a resinous binder to the composition of example 2 of Kashiwagi et al. JP 03-123715 based upon the direction on page 2 and to add sensitizing agents known to be useful with sulfonium salts, such as the merocyanine dye (k) taught by Toda et al. JP 06-130879 to increase the sensitivity of the composition, noting that the sensitized composition are evidenced to be useful with the same UV light sources taught Kashiwagi et al. JP 03-123715.

The examiner agrees that the claims are not anticipated, but the claims embrace the media irrespective of the intended use. The claims are not limited to the use of this composition in recording a hologram, but embrace the composition irrespective of use. The benefit of sensitization taught by Toda et al. JP 06-130879 clearly extends to the UV sources taught by Kashiwagi et al. JP 03-123715 based upon the disclosure of these UV light sources in both references.

Of epoxy monomers DPEP, PRGE and HDEP, used in example 2, PRGE does not have two epoxy moieties and includes an ether linkage as is not embraced by formula 1, neither is DPEP which includes the bisphenol Moieties which have more than 5 carbons (each phenyl has 6), therefore only HDEP meets the formula and therefore the added limitation does not affect the

rejection. The amount present in not recited in the claims rejected under this heading and the ~10% in example 2 (table 1) and the 30-70% of the binder taught in Toda et al. [0058] are well within the 10 to ~90% range recited in claim 40 (not dependent upon the claims rejection) and disclosed in the instant specification. HDEP is a monomer, which polymerizes under the effects of triphenylsulfonium hexafluorophosphate photoinitiator. The use of sensitizers is well known in the art and the examiner holds that the references clearly evidence their effect and the benefits of increased spectral sensitization. The applicant argues that broadly fluorinated compounds have poor compatibility with binders, but fails to show how this is relevant to the cited teachings of the use of a binder in Kashiwagi et al. JP 03-123715 and the examiner notes that while that might be the case for a range of the binder:monomer, there is no evidence that it is an issue for all ratios bounded by the claims. The rejection based upon Kashiwagi et al. JP 03-123715 uses fluorinated epoxies, not fluorinated acrylates argued on page 15 of the response and there is no mention of the exclusion of all other monomers in the claims. The monomer movement is only relevant to the process of use and the composition coverage embraces other uses. The urethane acrylates, polybutadiene acrylate and other acrylates are held to include unreacted vinyl or acrylate moieties. The rejection stands.

10. Claims 1,5,7,8,11-12,15-17 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al.. '340 and Kashiwagi et al. JP 03-123715.

Kawabata et al. '340 in examples 16-18, a mixture of cationically curable materials, free radical curable materials (bis(4-acryloxydiethoxyphenyl)methane), a radically polymerization initiator,a sensitizing dye (dye 1) and a triphenylsulfonium hexafluorophosophate as the cationic polymerization initiators (table 4, col 11) which was applied to a glass plate and overcoated with

a polyethylene film, exposed to the interference light and then postcured with a flood exposure from a mercury lamp (7/55-8/40). The use of various onium salts is disclosed. (6/8-18). The use of **fluorinated epoxies, glycidyl ether and oxiranes** are disclosed (3/8-4/3). The use of various acrylates is disclosed (4/4-46). Useful free radical initiators are disclosed (4/47-5/47).

It would have been obvious to one skilled in the art to modify the examples of Kawabata et al. '340 by using fluorinated epoxies, such as those taught by Kashiwagi et al. JP 03-123715 with a reasonable expectation of success based upon the direction to fluorinated epoxies by Kawabata et al.. '340.

11. Claims 1,5,7,8,11-13,15-17 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al.. '340 and Kashiwagi et al. JP 03-123715, further in view of Morii et al. 378.

It would have been obvious to modify the composition rendered obvious by the combination of Kawabata et al.. '340 and Kashiwagi et al. JP 03-123715 by adding fine particles of silica or the like as taught by Morii et al. '378 to allow its use in holographic transfer foils.

12. Claims 1,5-8,11-13,15-17 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al.. '340 and Kashiwagi et al. JP 03-123715, further in view of

Boutevin et al. '312 teach that for perfluorinated alkane containing monomers, the use of an oxirane (epoxide) or an oxetane ring is functionally equivalent.

It would have been obvious to one skilled in the art to modify the media rendered obvious by the combination of Kawabata et al.. '340 and Kashiwagi et al. JP 03-123715 by using oxetane moieties in place of the oxirane moieties in the cited cationically polymerizable monomer with a reasonable expectation of forming a useful photopolymerizable composition.

This addresses the oxetane issue of claims 6.

13. **Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent** form including all of the limitations of the base claim and any intervening claims.

Claim 30 lacks the limitation of the binder being an organic-inorganic hybrid polymer

The independent claims could be rendered allowable if the binder were limited to the organic-inorganic hybrid polymer.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranndt/
Primary Examiner, Art Unit 1795

Martin J Angebranndt
Primary Examiner
Art Unit 1795

11/9/2009